INCH-POUND

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SUPERSEDING
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PERFORMANCE SPECIFICATION SHEET

ELECTRON TUBE, CATHODE RAY
TYPE 10KP7A

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the electron tube described herein shall consist of this document and the latest issue of MIL-PRF-1.

DESCRIPTION: Magnetic deflection and focus.

PIN CONNECTIONS AND DIMENSIONS: See figure 1.

ABSOLUTE RATINGS:

Parameter:	Ef	Ec1	Ec2	Eb	Ehk	Rg1	Alt
Unit:	V	V dc	V dc	V dc	V dc	Meg	ft
Maximum:	6.9	0, -180	770	11,000	±125	1/	60,000
Minimum:	5.7	--- 1/	----	7,000	---	---	---
Test condition:	6.3	Adjust	250	9,000	---	---	---

See footnotes at end of table I.

GENERAL:

Qualification - Required.

TABLE I. Testing and inspection.

Inspection	Method	Notes	Conditions	Symbol	Limits		Unit
					Min	Max	
Qualification inspection							
Base material insulating quality	1216	---	Zone 5 (min)	---	---	---	---
Cathode illumination	5216	---		---	---	---	---
Barometric pressure, reduced	1002	2/	54 mmHg	---	---	---	---
Pressure (implosion)	1141	---		---	---	---	---
Direct-interelectrode capacitance	1331	---	k to all g1 to all g2 to all	Ck Cg1 Cg2	--- --- ---	8.0 10.0 10.0	pF pF pF
Vibration (cathode-ray tubes)	5111	3/		Width	---	2.0	mm
Shock	5115	---		---	---	---	---
Conformance inspection, part 1							
Voltage breakdown	5201	---		---	---	---	---
Voltage breakdown (magnetic types)	5201	---		---	---	---	---
Bulb, screen, and faceplate quality	5106	---		---	---	---	---
Modulation	5223	---	Ib = 200 µA dc	ΔEc1	---	38	V dc
Spot position (magnetic deflection)	5231	---		Distance	---	18	mm
Grid cutoff voltage	5241	---		Ec1	-27	-63	V dc
Grid No. 1 leakage current	5251	---		---	---	---	---
Zero-bias anode current (magnetic deflection)	5236	---		---	---	---	---
Gas ratio	5206	4/		Gr	---	0.25	---
Neck straightness	5101	5/		---	---	---	---
Aperture alignment	---	6/		Distance	---	8.0	mm

See footnotes at end of table.

TABLE I. Testing and inspection - Continued.

Inspection	Method	Notes	Conditions	Symbol	Limits		Unit
					Min	Max	
Conformance inspection, part 2							
Heater current	1301	---		If	540	660	mA
Screens	5221	7/		---	---	---	---
Heater-cathode leakage current	5251	---		---	---	---	---
Secureness of base, cap, or insert	1101	---		---	---	---	---
Stray emission (conventional types)	5216	---	Eb = 11,000 V dc; Ec2 = 770 V dc	---	---	---	---
Side terminal and base alignment	5101	---		---	---	---	---
Line width A (magnetic deflection)	5226	---	Ib = 200 µA dc	Width	---	0.38	mm
Line width C (magnetic deflection)	5226	---	Ib = 200 µA dc	Width	---	0.55	mm
Electrode currents (grid No. 2)	5201	---	Ec1 = 0	Ic2	---	15	µA dc
Focusing ampere turns (magnetic deflection)	5246	---	Ib = 200 µA dc; D = 3.250 inches (82.55 mm)	Ampere turns	450	570	---
Neck and bulb alignment	5101	---		---	---	---	---
Grid No. 2 leakage current	5251	---		---	---	---	---
Face tilt	5101	---		---	---	---	---
Base pin solder depth	1111	---		---	---	---	---
Permanence of marking	1105	---		---	---	---	---

See footnotes at end of table.

TABLE I. Testing and inspection - Continued.

Inspection	Method	Notes	Conditions	Symbol	Limits		Unit
					Min	Max	
Conformance inspection, part 3							
Life test	---	---	Group C; Eb = 11,000 V dc Ec2 = 770 V dc Ib = 60 µA dc; t = 500 hours (min)	---	---	---	---
Life test end points:	---						
Line width A	5226	---		Width	---	0.38	mm
Line width C	5226	---		Width	---	0.55	mm
Modulation	5223	---		ΔEc1	---	38	V dc
Heater-cathode leakage current	5251	---		---	---	---	---
Grid No. 1 leakage current	5251	---		---	---	---	---
Grid No. 2 leakage current	5251	---		---	---	---	---
Stray emission (conventional types)	5216	---		---	---	---	---

1/ When Ec2 is greater than 330 V dc or Ec1 is near zero, the effective resistance of the anode and grid No. 3 supply should be adequate to limit the anode and grid No. 3 input power to 6 watts. The peak grid No. 1 drive from cutoff should never exceed 65 volts.

2/ Maximum-rated voltages are applied to all electrodes connected through the base, and with tube in cutoff conditions.

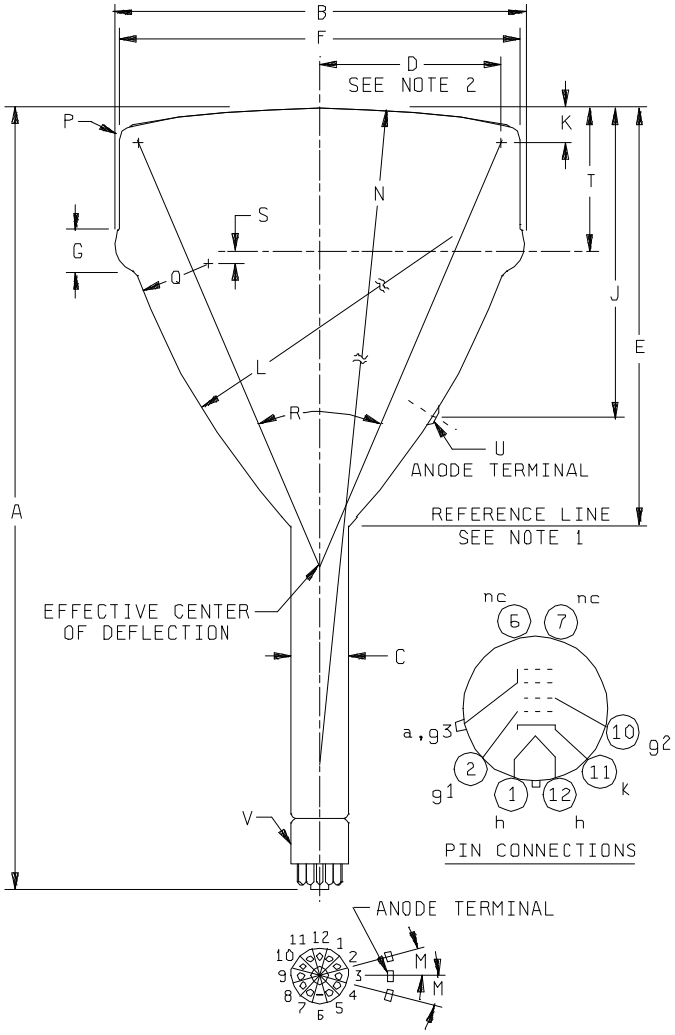
3/ Displacement of the spot corresponding to the image of the final aperture shall not exceed the limit specified.

4/ This test to be performed at the conclusion of the holding period.

5/ The neck and base straightness shall be determined by the insertion of the tube neck in a cylinder 5 inches (127.0 mm) long and 1.500 +0.003, -0.000 inches (38.10 +0.08, -0.00 mm) inside diameter. The cylinder should move freely between the reference line and the base of the assembled tube.

6/ The distance between the center of the unfocused, undeflected spot at low intensity (Ec1 near cutoff) and the center of the image of the masking aperture observed at high intensity of the unfocused, undeflected spot shall not exceed the limit specified herein. To prevent damage to the screen, Ec1 shall not be held at zero for more than approximately 10 seconds.

7/ The screen characteristics shall be measured with constant beam energy of 0.24 watts defocused to a spot approximately 0.25 cm in diameter. The test conditions shall be anode voltage (relative to cathode) 4,000 V minimum and beam current 60 µA dc maximum. The screen characteristics shall comply with the following minimum limits: cb5 = 400 cb; G5: 1 = 4.



Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
Qualification inspection				
U	Bulb contact: J1-21			
V	Base: B5-57 or B7-51			
Conformance inspection, part 2				
A	17.245	17.995	438.02	457.07
B	---	10.620	---	269.75
C	1.380	1.500	35.05	38.10
D	4.500	---	114.30	---
E	9.250	9.620	234.95	244.35
F	10.380	10.620	263.65	269.75
G	---	.750	---	19.05
J	6.870	7.620	174.50	193.55
M	10°			
Reference dimensions (see note 3)				
K	.650		16.51	
L	20.000		508.00	
N	42.000		1066.80	
P	.380		9.65	
Q	2.000		50.80	
R	50°			
S	.242		6.15	
T	2.900		73.66	

NOTES:
1. Reference line is determined by position where JEDEC gauge G-112 will rest on bulb cone.
2. Useful screen radius.
3. Reference dimensions are for information only and are not required for inspection purposes.

FIGURE 1. Outline drawing of electron tube type 10KP7A.

Custodians:
Army - CR
Navy - EC
Air Force - 11
DLA - CC

Review activities:
Navy - AS, CG, MC, OS
Air Force - 17, 19, 99

Preparing activity:
DLA - CC

(Project 5960-3528)